POPULAR MECHANICS

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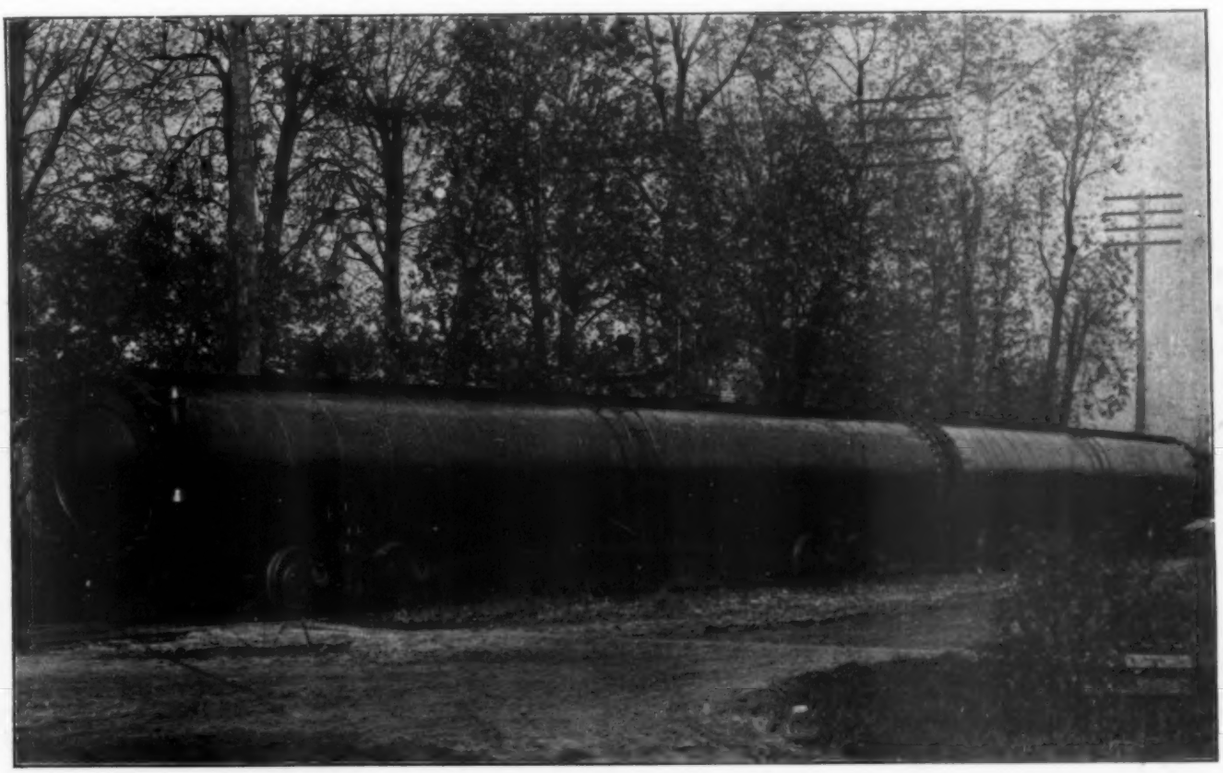
TIE PRESERVING PLANT ON WHEELS



New Labor-Saving Device that is Hauled to the Ties that are to Be Preserved, Instead of Having the Ties Brought to It

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SMITHSONIAN DEPOSIT

Tie Preserving Plants on Wheels

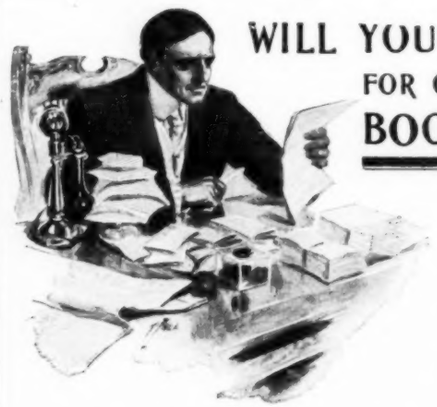
Great Retorts Are Now Hauled to the Ties Instead of Hauling the Ties to the Retorts

Instead of hauling trains of ties over miles of tracks to the tie preserving plant, it is now the custom among up-to-date railroads to haul the tie preserving plant to where the ties are located. This complete reversal of methods is a labor and time-saving practice confined to America at present, but destined to spread throughout the world. It is not difficult for even a novice to perceive how much more economical it is to haul the plant, occupying two or three car lengths, to where the ties are accumulated; than it is to haul the thousands of ties in trains of cars to a stationary plant and then haul them back again to where they may be needed for road building or repairs.

The movable tie preserving plant is a Chicago conception and is made by the Chicago Bridge & Iron Works. It is simple in construction easily transported, and it can work while in transit. The retorts are built in two sections as is shown in the front page illustration, which is a likeness of those in use on the Union Pacific railroad. The sections are bolted together, making a total length of more than 117 feet. They are 6 feet in diameter and each is mounted on two pairs of 80,000 pound capacity trucks and provided with air brakes.

Samuel M. Rowe, the noted American engineer, is the originator of a modern process of treating the ties. The retorts hold about 500 ties, which are placed therein while the retorts are empty. The retorts are sealed and steamed. The air is expelled from the retort at the middle as the steam is entering at each of the ends. When the air has been mainly expelled its vent is closed and the steam is brought to 20 pounds pressure and there held until the timber is cooked through. The purpose of this is to start the juices of the timber and dissolve all soluble matter and enable it to be expelled by the heat and by the aid of a vacuum drawn after the steam is discharged, thus leaving the timber measureably dry and in favorable condition to absorb the preserving solution when let in. The chloride solution (4½ per cent solution) is introduced while the vacuum is still on, resulting in the absorption of more than 6-10 pound of pure chloride per cubic foot of timber. This is applied under 100 pounds pressure, and when the desired amount has been absorbed the remainder is forced back into its proper receptacle. Next the glue solution (½ of 1 per cent) is admitted. It is allowed to flow in and fill the retorts, it usually being under 100 pounds pressure for 1½ hours. After the residue of the glue is forced back into the storage tank the tannin solution is applied for a like time and under the same pressure. The glue and tannin solutions used at ½ of 1 per cent strength are so near that of water that it is impracticable to measure by the use of the hydrometer, but the same law governs. The amount of each of these is computed at one-half pound for each 99½ pounds of water. One pound of fair quality of commercial glue, large in gelatin (the sticking properties not being essential) will combine with one pound of hemlock extract usually containing from 22 to 25 per cent tannic acid. If other and more concentrated form of the tannic acid is used they are proportioned accordingly.

The return of the unabsorbed solutions is accomplished by means of an air compressor which forces air into the retorts, thereby displacing the solution and forcing it back into its proper receptacle. When the tannin solution is forced back the operation is complete. The charge of ties is withdrawn and another is introduced. Each charge consumes, including the time spent in introducing and removing, nearly twelve hours, so that each retort will serve two charges in the twenty-four hours, each containing about 500 ties.



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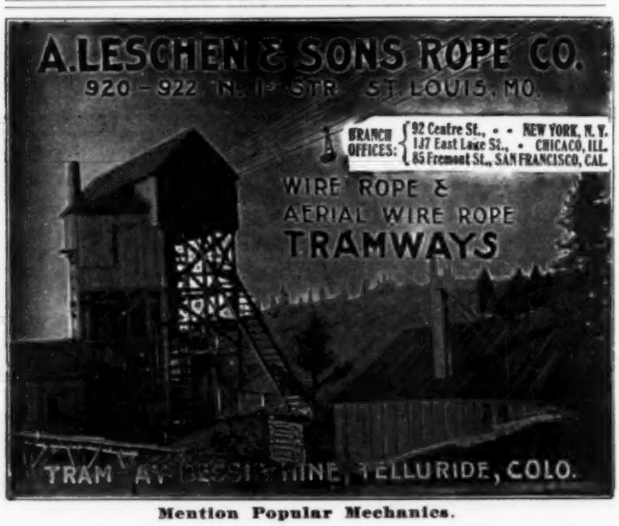
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AIR THAT REALLY INTOXICATES.

There is atmosphere that really intoxicates, not because it is full of ozone but because it is laden with alcohol. It is found in the great sherry bodegas in the south of Spain and in some distilleries and liquor store houses. The visitor experiences at first a decided sense of exhilaration, with quickening of the pulse followed by a narcotic effect, a feeling of languor and headache. In the great brandy stores at Cognac again to some people the air is sickening. It might be naturally expected that the more volatile constituents of wines and spirits would be the first to evaporate into the air and possibly the volatile odors would thus prevail. It is of course well known that sherry is a highly etheral wine. There would, therefore, appear to be some ground for concluding that when air is impregnated with the volatile vapor of spirits or wines, it has a marked effect upon the health. According to an examination made by the air of a distillery, it would appear that no less than an ounce of proof spirit or half an ounce of absolute alcohol may be present in five cubic feet of air.

In cotton baling the cylindrical bales are found to be superior to the square bales in fire risks, the American bale superior to the Lowery, and the recompressed bale to the gin.

Silk From the Worm to the Woman

Its Origin and Stages of Its Evolution From the Gummy Mulberry Leaf Secretion to the Modern Gown

Silk is in reality spun from the mulberry leaf, but the art of its spinning at this initial stage is a secret confined to an ungainly looking caterpillar called the "silk worm."

Like countless other products that go to make up our modern civilization, silk had its origin in China. Nearly 1,700 years before Christ the Chinese were wearing silk, and the caterpillar was plying its avocation for their exclusive adornment.

Si-ling-chi, wife of Hoang-ti, third emperor of China, is said to have been the first culturist of the silk worm. She is, therefore, until this day worshiped in China as "The Goddess of Silk Worms." In those early times silk cost, ounce for ounce, its weight in gold.

The silk worm, according to the Oriental annals, was introduced into Japan in the third century of the Christian era. A beautiful princess of India is said to have been placed in the hollow trunk of a mulberry tree by her cruel stepmother and set adrift in the ocean. The gods in their compassion protected the princess from harm and caused the log to be borne to the shores of their beloved Japan. The people of Toyo Ura rescued the princess and treated her graciously. The trunk, in which she was cast to the sea, took root and grew. When the princess died, the gods to award the hospitality of the people changed her body into a silk worm, which made its home in the mulberry tree. And ever since the silk worm has made its home in the mulberry tree and woven a web that has gowned the princesses of Japan and of the world. Thus from the transformed Indian princess and her mulberry tree boat grew the silk industry of Japan, and according to the gods we have the silk worm evolved from a woman.

Silk Worm From Six Days to Full Grown Feeding on Mulberry Leaves

The Apparel Gazette, the great authority of the American clothier, says: "In summer a grayish kind of moth lays the eggs, about the size of a shad-roe. From these eggs is hatched a small white worm, about a quarter of an inch long. Immediately they develop an insatiable appetite and devour twice their weight daily of mulberry leaves as they are fed. Under varying conditions they attain their full size in from twenty to fifty-six days, during which they cast their skins four times, while in a lethargic state.

Cocoon Cut Open—Chrysalis in State of Torpor

"When fully grown the worm is about three inches in length and has increased in weight 8,000 times its original weight. Now the worm will spin. Attaching himself to a twig, he builds the outside of this cocoon first, then, turning himself over and over towards the center, paying out his silken cable as he goes, he continues the work until he has spun himself nearly to death, and he has walled himself into a cocoon, formed of a delicate gum-matted thread five hundred to a thousand yards long, the only example on record of a living creature retiring into a hole and 'pulling the hole in after him.'

"Just here his life ends by transition to the pupa or chrysalis, which, in twenty to forty days, is ready to eat its way out, transformed again into a joyous moth or butterfly, who would at once seek a mate and repeat the reproductive process described, but man steps in and kills the moth by placing the cocoon in steam or a hot oven, as his exit would break and destroy the cocoon fibers or thread, leaving what is known as a pierced or perforated cocoon, of value only as waste. Thus paraphrasing a time-worn adage, the worm proposes, but man disposes, and rings down the curtain on the 'continuous performance' ere the commercial value of the cocoon is impaired.

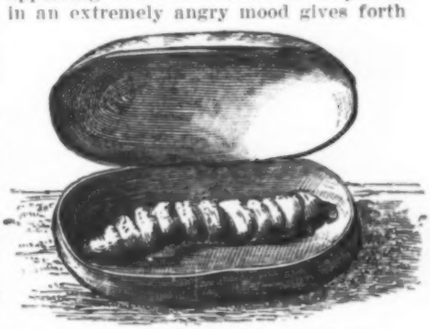
"The implements used to convert the cocoons into skeins of silk are most simple in all countries in the world. They consist simply of a basin and a reel, the basin containing warm water to soften the gum from the outside layers until the end of the thread can be caught. About twenty of these cocoon threads form the raw silk threads of commerce. The reeler dexterously unites them, gives the cocoons a twist with her chop stick and sends them whirling about the basin while she reels the skein, the whirling of the cocoons giving the threads a slight twist, and they are held together by the gum of the filaments. The silk is afterwards again reeled into skeins ready for shipment."

The raw silk is shipped in bales to the great American silk plants, where it is converted into silk cloth to be worn by American women.

"BIOMETER" PHOTOGRAPHS THE EMOTIONS

Pictures of Anger Look Like Fireworks—Love is Merely Indistinct Blurs.

With the aid of the "biometer" Dr. Hippolyte Baraduc, French scientist, claims he has succeeded in photographing the human emotions. Mental derangement presents a picture of white spots appearing in star-like clusters. A person in an extremely angry mood gives forth a picture that looks like an explosion of fireworks. Other feelings, such as love, make a series of indistinct blurs upon the plate. The doctor says that, in the taking of the picture, he first makes a diagnosis of the patient's physical condition. Then with his biometer he ascertains his vital and nervous force. The exact amount of vitality contained in the body is measured by means of several sensitized needles in the biometer. In every instance, he says, the same emotion makes the same kind of impression on the plate, and different emotions always make different photographs.



Cocoon Cut Open, Showing Worm Inside

Moth Miller as Developed From Silk Worm Chrysalis

Popular Mechanics pleases young and old.

Mare Island Naval Station

The great Mare Island Naval Station is located near the eastern head of the famous harbor of San Francisco, Cal. Mare Island contains over 1,000 acres, and lies about thirty miles northeast of the city of San Francisco. The island is rather low, the upper end being partly submerged during the prevalence of very high tides.

The channel on the eastern side of the island is very narrow—river-like in its appearance. Just opposite the naval station is located the little city of Vallejo.

Mare Island Naval Station was established in a small way many years ago by the government. However, the yard has steadily expanded until it is among the largest stations in the United States. The operating plants, powerful machinery, massive gearing, appliances and great machine shops are very complete, and capable of doing as good work as at any other shipyard in this country.

To accomplish this heavy appropriations have been made repeatedly by the government. There has been a steady advancement and improvement in buildings and general appliances. A large number of extensive and massive building have been constructed to accommodate the machinery, shops, stores, supplies, etc. More new buildings are projected for the near future.

Years ago an immense stone dry dock was built, and has been in constant service ever since. As the navy has been rapidly augmented and the size of the great battleships and cruisers increased in size, this immense dock has been found inadequate.

A large appropriation has been made by congress, and a mammoth stone dry dock is to be built as soon as practicable. It is the purpose to make the new dock one of the largest ever constructed by the government. Work has already been commenced on this great public improvement.

At present about 1,500 men are constantly employed at the naval station. During busy periods a much larger force is employed. All kinds of work is done at this station—building, equipping, repairing and overhauling of every type of war vessel, from a battleship to a torpedo destroyer. A great deal of repair work is being constantly done on war vessels.

Mare Island Navy Yard as Seen From the Bay

Only a few large vessels are lying at the station just now. Recently several large war vessels were ordered to South American and Oriental waters, leaving at Mare Island a few cruisers, the most of which are being overhauled.

Quite a fleet of torpedo destroyers, the most of which are new, are lying at the naval station; also two new submarine destroyers. All these vessels are ready for active offensive service at an hour's notice.

BABY GUIDES TINY AUTOMOBILE.

Master Ogden, Five Years Old, Has Little Motor Car That Weighs Just 75 Pounds

With his tiny automobile weighing just 75 pounds, which he starts, stops and guides at will, Master Hubert Ogden, not five years old, is the envy of every other boy in Columbus, Ind., where he lives. The little machine, which is a perfect automobile, was built by Hubert's father, Dore Ogden, manager of the Western Union Telegraph Co. The automobile is propelled by a 1½ horse-power gasoline motor. It has a fuel tank, located under the seat, that holds ½ gallon. This will carry the vehicle 10 miles and it is capable of a speed of 7 miles per hour. The wheels are 20 inches in diameter with 1½ inch pneumatic tires.

Master Ogden in His 75-Pound Automobile

SUBMARINES CAN'T SEE STRAIGHT.

Afford No Idea of Distance and are Worse Than Blind

It has been discovered that the greatest trouble with submarine torpedo boats is that they are worse than blind. They are fitted with instruments for looking through—a device on the periscope order—but the person who peers through them has little idea of the scope of vision. He cannot judge as to whether an object is a mile away or 100 yards away. Should it attempt to torpedo a war vessel, the submarine is liable to run squarely against the object of attack when thinking the vessel is still far in the distance. This is a queer perplexity that will utterly incapacitate the submarine for actual service until a remedy is found. A short time ago a submarine steered by one of these periscopes, smashed its nose against the dock wall when trying to make the harbor. Seeming in the far distance the dim outlines of the dock walls could be seen. For this the boat laid course. The next instant its nose butted into the wall, showing that it was nearly against the wall when it started.

CANADA HELPLESS AGAINST FOE.

English Military Expert Sees Danger From United States

Col. Kitson, formerly British military attache at Washington, and now commandant of the Sandhurst Military college of England, made a speech to the Canada Club, in London recently, in which he declared that Canada was helpless against attack from the United States should such a thing occur. He said:

"Fortunately, at present, the possibility of trouble with the United States is farther off than ever, but I assure you that the Canadians would enter a campaign under the greatest strategical disadvantages. You will be lucky in upper Canada if you have any ammunition. The American regular army would be ready to raid your lines of communication which lie along the frontier. Your only arsenal is at Quebec, at the end of the line. Without better organization and without another arsenal in the interior you never will be safe from raids."

Lord Strathcona said that Canadians were ready to defend their railways and their homes with their lives. Another arsenal was being built at Ottawa, which was at some distance from the frontier.

The solvent process employed for degreasing wool consists essentially of treating the wool in closed digestors with volatile solvents, like benzine, petroleum spirit, carbon bisulphide or carbon tetrachloride, until complete extraction is effected.

$55,000 Go Up in FireworkS

Magnificent Display at World's Fair Dedication--Good Work of Gas Balloons

Fifty-five thousand dollars went up in noise and smoke to please visitors to the World's Fair dedicatory services at St. Louis on the night of May 1. It was declared by many to be the most magnificent pyrotechnic display ever witnessed. It required just three hours to burn the tons of powder Henry Pain, the fireworks king, had piled on the ground. The sensation of the evening was the ascension of seven great gas ballons controlled by experienced aeronauts. At a great altitude the operators fired a salute of aerial guns. The largest vessel dropped a huge flaming American flag in pyrotechnics, 400 feet long by 200 feet wide. An aerial salute of 20 guns greeted the appearance of the stars and stripes. This was the signal for the dropping from the six other ballons the pryotechnic flags of the six other greatest powers. Each flag was 150 feet by 100 feet.

Brilliant Pyrotechnic Display at St. Louis

The festival hall and the Cascade gardens of the fair were done in fire on a set piece 600 feet long by 60 feet high, the exact vertical height of the genuine cascades. Streams of opalescent fire fell over the cascades. Other numbers, including about everything that is known to pyrotechnics.

DR. GATLING'S CHEQUERED CAREER

Dr. Richard Jordan Gatling, who died recently, experienced many adversities in his career as an inventor until he conceived the idea of the Gatling gun. He was born in North Carolina, September 12, 1818, and until 1888, when he established himself and his gun factory at Hartford, Conn., he had lived in half the large cities of the country.

As a mere lad he disclosed his faculty for invention. He assisted his father in designing a machine to sow cotton seeds and to thin out the plants. In 1844 he removed to St. Louis, where he invented a wheat sower. Later he graduated from Ohio Medical College at Cincinnati, but never practiced. Removing to Indianapolis in 1849 he there became a real estate dealer, but had poor success. He invented a hemp brake and steam plow, both of which failed, and in 1861 he thought out the plans of the gun that was to give him a world-wide renown and make him a rich man.

Mexican Onyx, Its Home and Uses

Its Possibilities for Interior Decorations are Just Being Realized

By Prof. Frederick Starr, of the University of Chicago

Everyone, of course, has seen Mexican onyx, but not everyone has asked where it comes from, how it was formed and what is its commercial importance. It is not in reality onyx. Onyx is a silicious rock, a quartz, with colored banding. Mexican onyx is a carbonate of lime, as is marble. In fact, in Mexico it is called marmol (marble), though again not correctly. Perhaps the best name is onyx-marble.

Onyx-marble is a holocrystalline, sub-translucent rock, presenting a finely banded structure; the finest grades and purest, are almost white, or of a delicate green, in color, beautifully clear, firm and fine grained, and susceptible of a brilliant polish. There are a number of places south of Puebla, in the states of Puebla and Oaxaca, where the precious material is, or has been quarried. Surely the three best known are Tecali, Tehuacan and Huitzo or Etla.

Of the onyx quarried in Mexico some goes to Europe, but much goes to the United States. A much larger quantity might be used, and with a little encouragement an important industry could be developed. We already use the stone largely in soda-water fountains and to some extent in table-tops and mantels. We have only just begun to recognize its possibilities for interior decoration. Merrill mentions its effective use in the handsome ark of the law in the Fifth Avenue Synagogue in New York city, and its abundant, though inartistic, use in the Auditorium Hotel in Chicago. For such work it is eminently adapted and rarely beautiful.

Quarries of Etta

It is already made into many forms of minor decoration and ornament, but it is capable also of wide employment in all forms of statuary and sculpture for indoor display.

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HAS A NEW WIRELESS SYSTEM.

Apparatus of Extreme Simplicity Produced by Two Englishmen

A new system of wireless telegraphy which has been for some time in experimental operation in England for a short distance and at sea is about to be brought forward in competition with the Marconi system. It is the outcome of the joint labors of Sir Oliver Lodge, principal of the University of Birmingham, and Dr. Alexander Muirhead, a well-known telegraphic expert. It employs Prof. Lodge's inventions which Muirhead and others are using, and also one at least of Lord Kelvin's inventions. Experts who have seen the present Lodge-Muirhead system working pronounce it to be more rapid and clear than anything yet exhibited. Prof. Lodge's new coherer, which is the integral feature of the system, consists of a small steel disk rotating in light contact with a column of mercury through an oil film. It is stated that the sensitiveness of the coherer is remarkable, as is its simplicity and freedom from derangement. It is stated that the submarine cable companies have so far abandoned the reserved attitude they have shown towards the other systems as to take an interest in the Lodge-Muirhead system.

ZEIGLER EXPEDITION NEARLY READY.

Supplies Arranged and Start for Arctics to Be Made in June

Anthony Fials, who is to head the Ziegler artic expedition, has returned from abroad where he went to look over the ground and see about the purchase of supplies. He now returns to cousult with William Ziegler, preparatory to starting on the expedition. Mr. Fials said:

"We expect to get off some time in June. The ice broke up early and the prospects for the expedition are good. The America was send down from the Tromsoe to Trondheim under her own steam. She is being cleaned, new decks put in and other repairs made. The America will sail as soon as she is ready, but I cannot give the date."

The Chinese Printer's Task

His "Case" is a Whole Room and Contains Thousands of Characters

The American printer has all the type in a small case in front of him and can easily reach every letter with one hand without moving from his seat. He reaches to the center of the case to get an "e," to the upper right hand corner to get a "y" and to the lower left hand corner to yet a "z."

It takes a whole room to hold the type used by a Chinese printer. There are 5,000 or 6,000 characters, divided off into classes by partitions. He goes to one corner of the room to get one type and then may walk to the opposite corner to get the next type. And it is claimed that the Chinese invented printing. The accompanying illustration shows the interior of a Chinese newspaper office. The compositor has made great improvements in his former methods by employing an American "stick," and the "forms," composing stones, "keys" and presses are of American make. The Chinese printer carries the copy in his head, for the Chinaman has a wonderful memory. He must have in order to learn the language and the thousands of characters necessary to read and write his language. The printer looks at the copy once and is able to set up an entire article of say 500 words without consulting it again.

Chinese Printer at Work at His Case

The Chinaman is said to have the heaviest brain by weight of any nationality, and it requires more brain to become e[illegible] in any other c[illegible]

[illegible]ame methods of printing are employed by the Japanese, as their language is of the same general character, but very different in sound, words and the arrangement of the alphabet.

1902 PENNIES NOT RECALLED.

Fake Report Has Gained Wide Circulation and Deceived Many

A report has gained circulation in many sections that the United States treasury department had ordered recalled all the pennies of 1902 issue, because, the report had it, a mistake was made and gold mixed with copper in the coinage. It was said that every penny of the 1902 issue was worth 10 cents. So much confidence has been placed in the report by many that they have accumulated large quantities of the pennies really expecting to exchange them for 10 cent pieces. Popular Mechanics wrote to the treasury department and here is the answer received:

"Regarding the 1902 pennies, I would state that this story is a fake and there is nothing in it."—W. P. Willams, Assistant Treasurer United States.

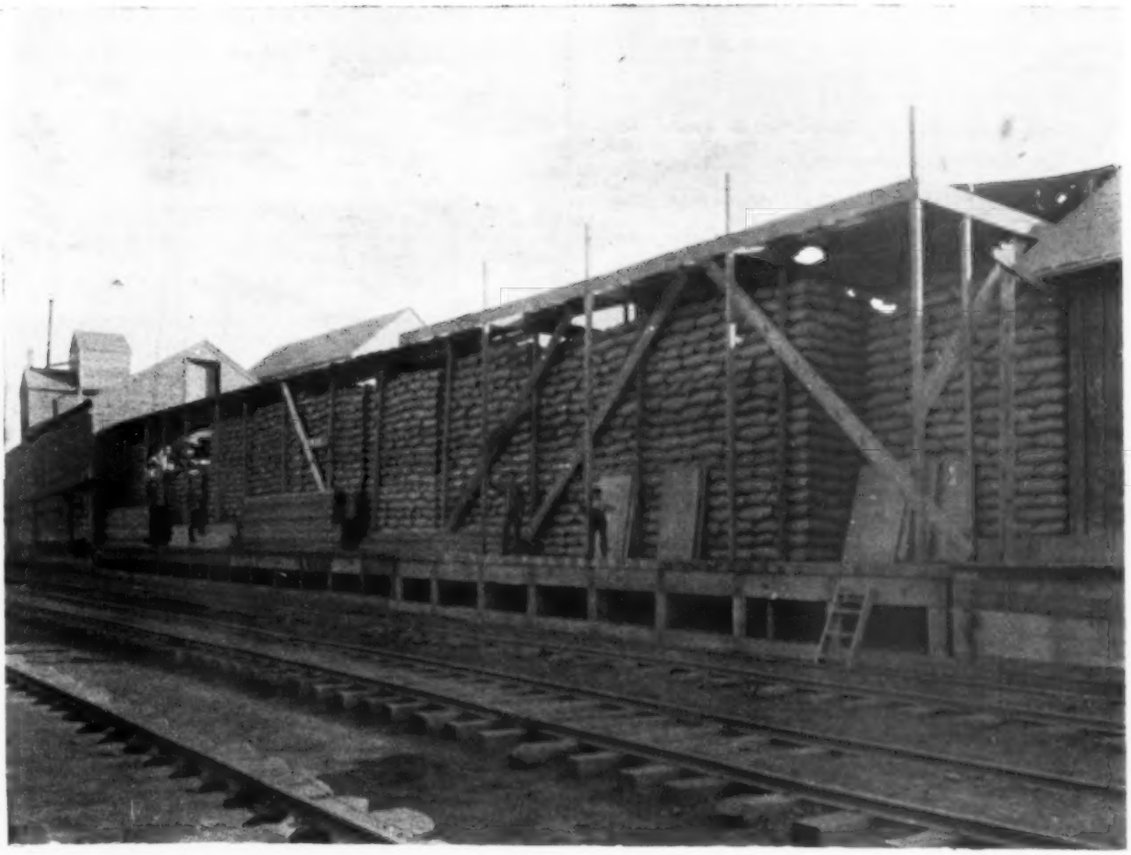
Popular Mechanics is written so you can understand it.

PAPER WINDOWS IN JAPAN.

They Filter the Air and Would be a Blessing in This Country

In Japan very thin, transparent paper is used instead of glass in windows—not that glass is not as plentiful and cheap as in this country, but that the Japanese desire the paper to filter the air they breathe. It serves as an equalizing influence to keep out a preponderance of moisture; to shut off dust and smoke and to generally purify the air by ridding it of germs. By a few the plan is being adopted in America and the results have proven most satisfactory. Paper for only the upper parts of windows and for transoms means a 50 per cent reduction in the amount of smoke and dust that pervades our homes in cities and makes its way into our lungs.

An agricultural exhibition is being held at Buenos Ayres this month under the direction of the Argentine Rural Society.



ONE HUNDRED AND FIFTY THOUSAND SACKS OF WHEAT are in the pile shown in the above illustration. These great shipments are from Portland, Ore., and are the result of the increasing demand for American wheat in the Orient, as told in a previous issue of Popular Mechanics. It has been said that when the Chinaman learns to eat flour bread the American Wheat grower will wear diamonds. It will then soon be time for the "sparks" to flash on the wheat growers, for the Chinaman is beginning to eat biscuits made of American flour, and an American bakery has been established in Peking.

SAYS MUNICIPAL OWNERSHIP IS BAD

Charles T. Yerkes Tells [illegible]nese than [illegible] Conditions in Europe Where Private Control Does Not Obtain

By Charles T. Yerkes

That the public is to be considered in all matters of industry is without doubt true. In our country, with our government, the people should always be considered to the most extreme extent. May I be permitted to ask "Who are the people?" My answer is, "The inhabitants of the country." Not merely the poor man nor the rich man, nor the man of middle class, but all combined. It is the people in the busy strife of life who are entitled to the ownership and the possession of the properties of the country. To argue otherwise would be to put a premium on idleness, vice, and laziness.

Every man should be able to own himself, or, in company with others, not only private industries, but public industries—if I may term them as such. Here we see what a slight difference there really is in these terms. A large dry goods establishment is a private industry. A small railroad is a public industry; both striving in the same manner, one to clothe and the other to furnish transportation. So it is really difficult when thoroughly considered to draw the line between the two. The one is generally a close corporation, while the other is extended. It would be difficult to consider the fact that municipal control could be extended to the former. In reality the railroad company would be even more difficult to handle than the large store.

There are several reasons, however, why I am sure that municipal control should rarely exist. First, all business ventures should be taken hold of intelligently and with due consideration for economy. How ridiculous to think that a municipality could run a railroad economically or wisely. Can we for a moment imagine one of our railroads being managed by our city council or the state legislature?

The results would be really amusing if they were not so serious. And I now ask the question, "Who owns our railroads?" and I answer: "The people." I may safely say that millions of the population of our country have interests in our railroads throughout the land. They are, however, that class of people generally who have earned the right to that ownership. I fail to see any attempt at municipal ownership, in Europe particularly, but is a failure as considered with what it might be with private ownership. Take Glasgow, for instance, which is looked upon as being one of the best instances of municipal ownership in the world, and we find the expense of construction and operation amounting to such a sum as would shame any private corporation. And the people who are in charge of the Glasgow works are most honorable gentlemen, and I believe did the best that their abilities permitted.

We look through Europe, and find railroad lines operated by the government, and where such is the case we can rest assured that the operation is not only most expensive but extremely poor. Who would have the hardihood to think that if we had had municipal control in this country for the last twenty years we would have had this great system of railroads that now exists. That this private ownership can be abused there is no doubt, but what cannot be? No matter what the abuses have been as relates to the country, it is far ahead of anything like municipal control.

The great precious metal ore smelters in the country are using briquetting machines to force their flue dust and fine ores into blocks; and now the iron ore smelters are about to adopt the same economical method.

Easy Electrical Experiments

By L. P. Dickinson

AN ELECTRICALLY LIGHTED LAMP.

The next article by Mr. Dickinson in his interesting electrical series will tell how to make an electrically lighted lamp, something that will interest every amateur electrician. It was the publisher's desire to present the article with this issue, but owing to an unavoidable delay it had to be omitted.

ELECTRICITY SAVES VALUABLE BIRDS.

At the zoo in Cincinnati is a rare collection of valuable birds. The keeper has recently been greatly disturbed by the mysterious disappearance of some of his quail and pheasants. Finally he discovered an army of rats were the thieves and that they entered the cage by climbing over the fence which inclosed the collection. He placed a large wire on the top of the fence, connected a strong electric light current, and the next morning found several dead rats and one cat. He has had no trouble since.

MAKING MEXICAN DRAWN WORK.

An Art That Americans Covet But Cannot Acquire

All over America Mexican drawn work is regarded as exceedingly artistic, and the skilful intertexture is considered remarkable. In Mexico the art has been known and practiced since the days of Cortez. There girls before they are out of their teens become experts in drawing out the threads from the fine cloths and uniting the cross threads to form the pretty patterns. Their fingers become so deft in the art that it amazes the foreigner to witness the dexterity with which they transform the blank cloth into most beautiful conceptions. Mexican drawn work has imitators everywhere, but there seems to be a secret about the manner of intertwining the threads that none but the Mexican woman

Mexican Girls Making Drawn Work

knows. They place their work in a frame, as shown in the accompanying illustration, and use the right hand above the cloth and the left below.

An action is to be brought in New York, according to report, to declare the 18-story building, known as the Flat Iron, a nuisance, and to order its removal. The occupant of a store opposite has had his plate glass windows twice broken by the wind in three months, violent currents being caused by the form of the building. It is also alleged that people avoid the locality on account of the wind.

LOCOMOTIVE, BAGGAGE CAR AND COACH ALL IN ONE.

The managers of English steam roads are at last waking up to the American idea of what constitutes a proper suburban service. In order to give more frequent trains there is now going into service a strange combination of locomotive, baggage and passenger car, all in one. The car is 56 feet long, seats 42 passengers, and can attain a speed of 30 miles an hour in 30 seconds. The engineer can operate from either end of

Locomotive, Passenger and Baggage Car in One

the car, which saves the necessity of turning the car. The passenger section is divided into first and third class compartments.

FIGHT WITH A SNAKE IN MID OCEAN.

Thrilling Encounter Related by the Captain of the Afridi

When the British ship Afridi, 47 days out from Singapore, tied up at her pier in New York a few days ago, Captain Golding and his crew told as hair-raising a snake yarn as ever came off the high seas, where live snakes, as a rule, do not abound. Capt. Golding is an enthusiastic zoologist and is on the staff of Director Hornaday of the Bronx Zoo. Therefore when the Afridi left Singapore, the captain had stowed away in cages here and there, in old places from poop to galley, one of the finest collections that he had ever yet brought over to enrich the zoo; and on the sailing list was a 24-foot python. This huge ophidian was one of the largest the captain had ever seen.

On a dark still night soon after the ship left Singapore a teriffic hubbub broke out among the animals on deck. Capt. Golden went to investigate. The python's cage was empty, but there was the python winding its sinuous length about the starboard companion ladder. Instantly there was pandemonium among officers and crew, all of whom rushed to quarters of safety. The captain was the first to get his nerve back and advancing cautiously tried to get the bite of a rope around the snake. But the python was alert and no matter from what quarter the captain advanced, he coiled for a throw at the brave mariner. So the captain retired a minute in favor of the mate.

"The mate was the only man who had the nerve to stay on deck," said the captain. "He went to his bunk and got a bull's eye lantern. Then I armed myself with a broadaxe and we began to skirmish. The lantern sort of blinded the snake.

"In about half an hour we got a crack at him. The axe took him just in the middle as he hung from the bridge, and cut him clean in two.

"And then, by gum! we had two snakes to fight instead of one. They hung on to the bridge and waved and wriggled madder than the one of them had been. It took me thirty minutes, watching chances, while the mate flashed the bull's-eye into the piece that had the head before I got another whack. This time I cut off another piece. They weren't so lively now, and we dodged and backed until I got in a good blow about three feet from the head. That did the business, and when we were through with the rest of the thing, there were twelve pieces of him lying around the bridge.

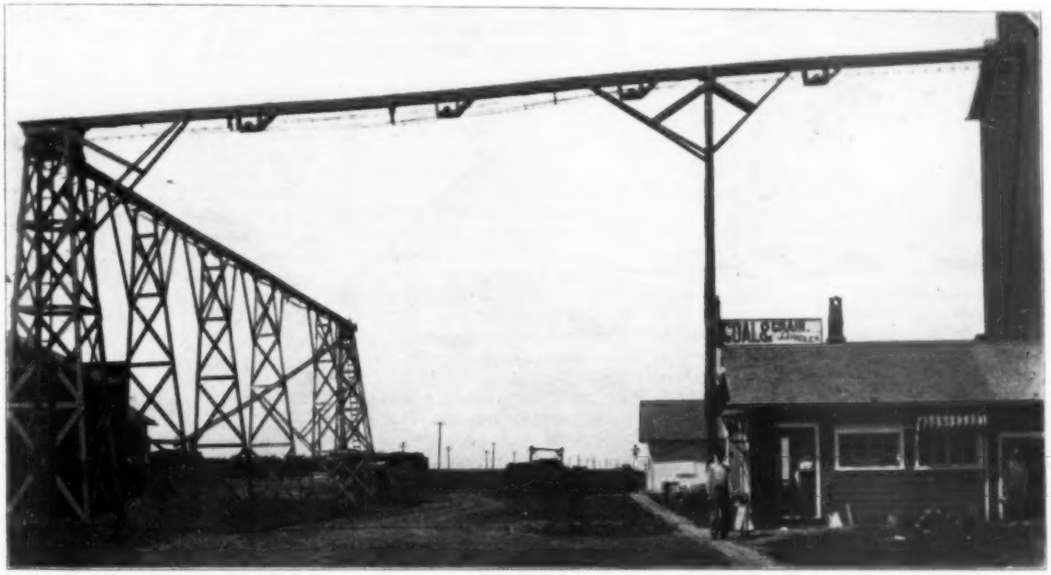
"It was another half hour before the crew came out of their holes. They wouldn't believe at first the thing was dead. And then we held a post mortem and had the deck washed down."

Every inventor ought to read Popular Mechanics every week.

GRAIN DEALER BESTS A RAILROAD

Wouldn't Give Him a Sidetrack, So He Built a Conveyor to the Railroad

A grain dealer of Osco, Ill.,—J. J. Hadley is his name—had a rival who was trying to cut into his business. Hadley's rival had a sidetrack running to his elevator. Hadley wanted a sidetrack, too, and asked the Rock Island & Peoria Railroad to build it for him, offering flattering inducements. The railroad refused all his offers. Hadley, not proposing to be outdone, built the conveyor shown in the illustration, running from his elevator to the town sidetrack. There is nothing like it in any country station in the United States and Hadley's business is now on the boom. The conveyor is 300 feet long and the grain is discharged through a spout 22 feet in length, making a total distance of 322 feet that the grain travels.



Long Car Loading Conveyor From Elevator

The Grain Dealer's Journal says: The conveyor is driven by a steel cable with sheave wheels, power being taken from the elevator head, in connection with which the conveyor is operated. At the right angle the drive is carried on mill wheels.

HOW CRABS ARE CAUGHT.

Those who crab for market on the Choptank river Maryland, have an ingenious method of catching crabs in quantity, says Country Life in America. A rope about the thickness of a clothes line, several hundred feet long, is kept coiled in a keg. The closer the cover the more pleasant the sail with the fisherman to the crabbing grounds, for at intervals of two feet along the entire length of the rope he has untwisted it and inserted between the strands short pieces of salted eels. The torsion of the strains holds them tightly in place. Each end of the rope has a keg buoy attached, together with a heavy stone. Arriving at the favored place, usually on oyster beds, he throws a keg overboard and plays out his highly scented rope as he sails. When the other end is reached he anchors it with another buoy. After lowering his sail he waits a few minutes, then takes his stand on the bow of his boat. Alongside of him is his landing net with a handle six feet long. He raises the buoy and stone, and hand over hand pulls his boat along the line. When a crab, clinging to its refreshments, comes in sight he seizes his net, dashes it under the crab and flings it into the boat. The wary crab may loosen his hold and dive for the bottom, but such is the fisherman's dexterity that his net is swifter than the crab. One seldom gets away. Several hundreds of crabs are often taken at each overhauling of the rope. When he has caught all he wants, he packs them in barrels and sells them to a local dealer, who ships them to market.

When it's great Popular Mechanics will tell about it.

TROLLEY LINES AS STEAM ROAD FEEDERS.

High Development of Electric Railway Traffic in New England Leads in Revolutionizing Departures

Steam and trolley roads will soon be run as parts of one system, the street railways acting as feeders to the main line of steam track. In New England, where the trolley system has made its greatest progress, these conditions are now nearing reality. Rails of the same weight are used on the electric as on the steam roads and well nigh equal speed is made in rural districts, while the greater speed is made in city limits. The cars are being made nearly as large, if not so heavy, as on steam roads, and in nearly all country places mails and light freight are carried as well as passengers.

Trolley lines are connecting country towns which could only be reached by wagons, and by bringing them into communication with railroad stations are developing their business. Nearly every state in New England can now be crossed, north and south and east and west, by electric cars and in some cases cities as far apart as Portland, Boston, Providence, Hartford and New York have been connected by "the broomstick train."

The New York Central is to use a stretch of track near Oxford, Mass., about five miles from Worcester, for delivery of coal to a section it cannot now reach easily. This track was laid and is used by the Worcester & Southbridge Street Railway. The fact that a locomotive and freight cars can run upon rails originally laid for trolley cars is opening up a wide field of speculative possibilities among railroad people.

NEW LIFE BOAT LAUNCHED.

The life boat designed by Mr. J. Mitchell, of Manitoba, was recently launched at Dartmouth, N. S., and tested by Capt. Bloomfield Douglas, R. N. R. The boat, which is cigar-shaped, was launched from a wharf 14 feet above the level of the water. After showing the easy manner in which the boat could be rowed, the crew made a test for the purpose of proving that the boat was self-righting. With the efforts of a number of men pulling at ropes, attached to both ends, the boat was overturned. Almost instantly, it recovered its proper position. The life boat is capable of seating 25 persons comfortably, but can hold more. Since the boat is entirely closed, its occupants cannot perish from exposure. The boat is easily launched for it is provided with a suspending rope which runs through its entire length on the interior, through holes at both ends of the boat, and which is attached to the davits. When all the passengers have been received on board the little craft, the rope is cut from the inside, so that the boat drops and is free.

A San Francisco firm is to install a power transmission plant in the Klondike for the operation of a gold dredge.

SHOP NOTES

VENTILATOR HOODS FOR RANGES.

The ventilator hood as arranged over most ranges is entirely wrong in principle, and the frequent failure to carry off smoke and smell should not be wondered at, says the Metal Worker. Suppose a pipe 10 inches in diameter, placed over a fire as shown in Fig. 1, has a draft velocity of 10 feet per second. Now add to the bottom end of the pipe a section 20 inches in diameter made as shown in Fig. 2. A 20-inch pipe has four times the capacity of a 10-inch pipe; consequently the draft velocity will therefore be one-quarter of 10 feet per second or 30 inches.

Fig. 1.—An Example of Efficiency.

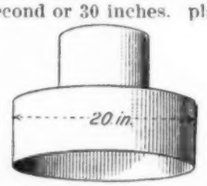


Fig. 2.—Efficiency Reduced

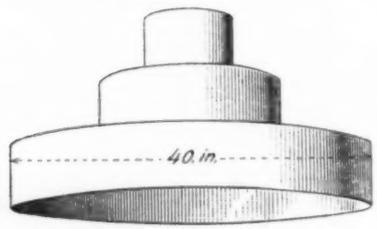


Fig. 3.—Efficiency Further Reduced.

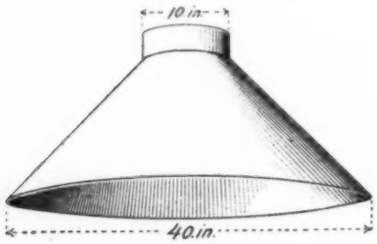


Fig. 4.—Less Efficient.

Suppose now the lower end of the pipe be again increased to 40 inches, as shown in Fig. 3. The capactiy is now four times as much as that of the 20-inch pipe and the velocity is decreased to one-quarter of 30 inches, or 7½ inches per second, or practically nothing.

Now if, instead of making the pipe in increasing sections, we take a short cut and make it a tapering increase, as shown in Fig. 4, we have the common form of hood, which is always supposed to work and always fails. The point of strongest suction is in the 10-inch throat. The principle in making hoods is to bring this point as close as possible to the fire. This may be proved by adding to any old hood of this shape a flat sheet with a hole in the center, as shown in Fig. 5. Furthermore, by so doing it is possible to catch all the smoke or vapor before it expands and mixes with several times its volume of air which must then be all drawn out, making necessary a large increase in the size of the pipe.

Concerning the canopy, if the ends be inclosed with movable parts it can be improved by placing a sheet across the bottom end of the canopy so as to make the draft hole along the front edge. This will inclose the back ends and top, leaving only the front open, as shown in Fig. 6.

Fig. 5.—The True Efficiency Shown.

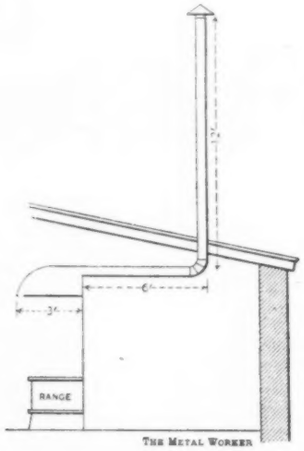


Fig. 6.—Suggested Improvement for the Hood Used.

TEMPERING MACHINE DRILLS.

To secure uniform temper in working parts of machine drills the various pieces, nuts, bolts and moving parts of the drill are carefully packed in boneash in a steel box, a cover luted on, and the whole placed in a furnace where it is heated to a bright red. The box is then removed from the furnace, the cover taken off, and the several pieces of steel thrown into a tank of cold water as quickly as they can be removed from the boneash. This gives the entire lot the same temper, securing the much desired hardness and uniformity of texture.

1,520 LOCOMOTIVES LAST YEAR.

The Baldwin Locomotive Works turned out 1,520 engines last year, valued at about $20,000,000, an increase of $3,000,000 over the previous year.

Many retail dealers in farm implements are displaying the machines in their warehouses, in operation, power being secured from gas engines.

The association formed in Paris for the development of cotton growing in French colonies, has already attained a membership of more than 200 persons in the cotton trade.

THE SUN MOTOR—HOW IT WORKS.

The sun motor which is used to furnish heat to drive a steam engine in South Pasadena, Cal., was illustrated in the April 25 issue of Popular Mechanics in the article on raising ostriches in the United States. In describing the solar motor the Sunset Magazine says:

In outward appearance the solar motor partakes of some of the characteristics of a windmill, a steam engine, a mirror maze and a merry-go-round. It is in shape like a section of a huge umbrella of very substantial construction, having a diameter of thirty-three feet at its narrowest. The whole inside surface of the solar motor now being operated at Pasadena, Cal., is covered with mirrors, each two feet long by three and a half inches wide. Nearly two thousand of these long, narrow mirrors catch the sun's rays and reflect their heat upon a slim boiler which is just where the handle of the umbrella would be. The great reflector is set like an astronomical telescope, the axis being north and south and the movement from east to west. It is so nicely adjusted that one person can easily move it in either direction. The boiler is thirteen and a half feet long and holds one hundred gallons of water, with eight cubic feet of steam space to spare. It is made of firebox steel covered with lampblack. When the reflector is not working the boiler is quite inconspicuous, but when the concentrated heat from the mirrors is focused on it it gleams like polished silver and is the most striking feature of the contrivance. In a little while it becomes so hot that a stick held against it smokes and bursts into flame. In about an hour steam is generated and is conveyed from the head of the boiler through a flexible metal pipe to the cylinder of the steam engine, being thereafter used in the ordinary manner.

REMARKABLE IMMUNITY OF CHINESE TO HEAT.

Chinese firemen seem to be immune to the fierce heat of the fire room on ocean steamers, and can stand up to temperatures that would speedily prostrate white men. On ocean express steamers white firemen lay off every third trip to recuperate, and have to get the very best food and large quantities of it, but a Chinaman will eat a quart or two of rice and hold his position in front of a forced draft that will sweep the coal off of the shovel so soon as it is presented at the open door. This qualification of the Asiatic fireman has been noted down by observers who see in it an opportunity to cripple the trade of their opponents by dissuading, through force, if required, Chinese firemen from shipping on English vessels, and an English paper has stated, upon competent evidence, doubtless, that without Chinese firemen the insurance rates would be so high that the vessels could not be run economically. There are over 60 lines of steamers trading with the Far West; out of this large number only three of them have European firemen, and these have to have coolies to assist them.

The German cable-laying steamer, the Stephan, which was launched recently, is the first cable-steamer ever turned out from a Germany shipyard.

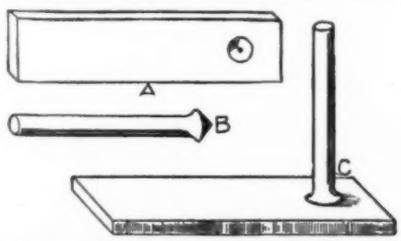
TO COLOR BRASS BLACK.

While brass will readily tarnish and oxidize the production of a good black is by no means easy. The Metal Industry gives the following directions:

The solution now generally employed for the production of a black or oxidized surface on brass is a solution of carbonate of copper in ammonia. The work is immersed in it and allowed to remain until the required tint is produced. The carbonate of copper may be purchased but if one wishes to make it the following method answers well: Make a solution of blue vitriol (sulphate of copper) in hot water and add a strong solution of common washing soda to it as long as any precipitate forms. The precipitate is allowed to settle and the clear liquid is poured off. Hot water is now added, and the mass stirred and again allowed to settle. Again the clear liquid is poured off, and the operation of adding water, settling and pouring off repeated. This is continued until everything has been washed out of the green carbonate of copper, which remains in the bottom of the vessel. Six or eight times are usually sufficient to remove the impurities. After the water has been removed during the last pouring and nothing is left but an emulsion of the thick plastic carbonate in a small quantity of water, liquid ammonia is added until everything is dissolved and a clear, deep blue liquid is produced. If too strong, water may be added, but I have found that a strong solution works better than a weak one.

HOW TO WELD A ROUND PIECE OF IRON TO A FLAT PIECE.

This is explaned by a writer in the American Blacksmith as follows: Take the round piece B and back it up cone-shaped, leaving an edge all around and a point in the center. Take the flat piece A and with the small end of the hammer hollow the same as the round piece, and then punch a very small hole in the center of the hollow on the flat piece to let the gas escape. Take a good welding



TO WELD A ROUND TO A FLAT PIECE OF IRON.

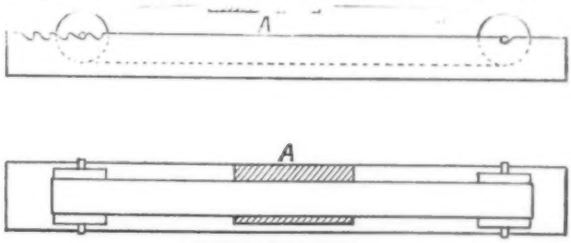
on the two, jump the round on the flat C, and turn it upsidedown. Put into a heading tool and give it a few strokes, or go around the edge of the lip with a small fuller. Hollow the flat piece about ¾ or ½ inch deep, as seen in sketch.

HOUSE OF FISH SCALES.

A negro at St. Augustine, Fla., has built a house of shark's bones and covered the sides and roof with scales from the scales of the drumfish. These scales are large and of beautiful colors, and it is estimated over 3,000,000 scales were used, which would require 16,000 fish to produce. The house is 6 by 10 feet and 9 feet high. It will be seen at the world's fair in St. Louis.

MAKING SAND BELTS.

A writer in the Wood-worker tells how anyone can make a sand belt for sanding spokes and similar work. Only four things are necessary to make perfectly satisfactory belts, viz, cotton belting or webbing 3 or 4 inches wide and medium weight, to be purchased of any hard-



MAKING SAND BELTS.

ware dealer; sand, glue, and a simple arrangement for holding belts while being sanded. This consists of a square box or trough about 12 inches wide, 8 inches deep, and 2 feet longer than half the length of the belt to be sanded. This box is provided at each end with a 6-inch roll, one roll adjustable longitudinally for stretching the belt. The illustration will give the idea. A is a board which supports the belt while it is being glued. Glue should be hot and evenly spread with a brush. If glue is too thick the sand will peel off and belts will also burn quickly. If too thin the sand will not stick well. Glue about 2 feet at a time and sprinkle with sand from a pint dish punched full of holes, and so on until belt is covered, when it is taken off and stretched on two pins to dry. This keeps it from curling and wrinkling too much. Apply the sand as quickly after gluing as possible; it holds longer.

It is better to wash and dry a new belt before sanding, though it is not always done. Sand will wear longer on an old belt than on a new one. It is not necessary to wash a belt every time it is covered, but certainly it should not be recovered more than three times without washing, as it gets thick, unpliable, and scratches and burns the stock. Do not cover a wet belt. If you wish to wash and cover the belts the same day wash and hang in dryhouse, or put loosely on pulley of machine and let it run for an hour, when it will be dry. Cut ends of belt diagonally and sew on sewing machine.

SHUTS OFF WATER IN OIL WELLS.

By James C. Chambers, United States Consul at Bantam, Russia

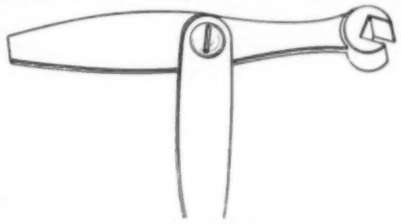
An entirely new and original plan of shutting off water in the oil wells of the Baku fields has made its appearance. The idea, as I understand it, is to freeze the water to the bottom of the hole, thus solidifying it and permitting oil to be raised by the baler. I cannot say that I very clearly understand the plan, for I do not know how the oil is to be got through the column of frozen water which, being below the oil, must, it would seem, effectually shut out the oil from the hole. If, however, this scheme proves practicable, it will apparently prove also expensive, for it is stated that it will cost from $10.30 to $12.87 per day per well producing 5,000 gallons.

RECIPE FOR SOFT SOLDER.

A writer in the Metal Worker gives the following as good recipes for soft solder: A good soft solder is composed of 50 parts bismuth, 25 parts tin and 25 parts lead. This mixture melts at 200 degrees F. Another good solder is composed of 50 parts bismuth, 30 parts lead and 20 parts tin. This will melt at 190 degrees F. The solder that I use in soldering Britannia metal and block tin pipes is composed of two parts tin and one part lead. I do not know the melting point of this mixture, but I do know that it melts in the blow pipe flame at many degrees lower temperature than either tin or Britannia metal, and it is nearly of the same color. Care must be taken in mixing these solders to keep them well stirred when pouring into molds. Care should also be taken that metal which melts at a higher temperature be melted first and then allowed to cool to the melting temperature of the next metal to be added, and so on. Articles to be soldered with these solders should be joined with a blow pipe to get the best results, but if a copper is used it must be drawn out to a long, thin point. For a flux use powdered rosin or sweet oil.

A HANDY SCREWDRIVER.

A correspondent in the American Miller tells about a handy pocket screwdriver and wrench. It is four inches long by one-half inch thick. The main bit tapers out to a small point and is used on screws from No. 10 down to very small ones. It is particularly handy on screws such as are used in the hinges of feeder doors.

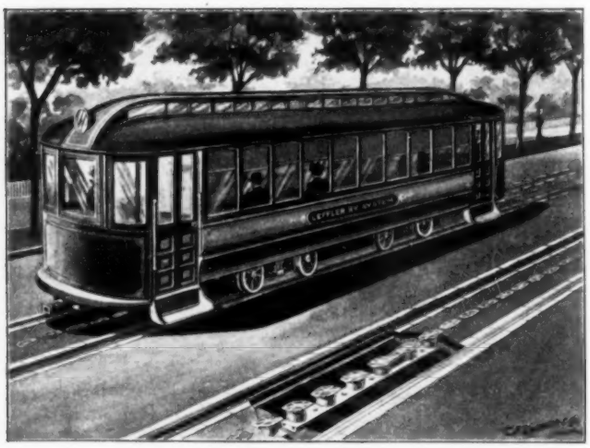


Uhique Pocket Screwdriver

The auxiliary bit is large at the point and is very handy in setting slotted set screws in set collars, where more force is required than can be attained with an ordinary driver. In small spaces, where an ordinary driver is too long, it is just the article needed, and saves many trips to the bench.

The wrench end is used on small set screws.

A large silk balloon filled with the best quality of hydrogen is to be released at the St. Louis world's fair, and the person who finds it will be given a season pass to the fair. It is estimated that the balloon will travel a thousand miles.



A Startling Advance in Methods of Electric Traction

THE Leffler Electro-Magnetic Railway System completely revolutionizes old methods of Electric Traction. It affords ¼ greater speed with increased safety, consumption of fuel is 40 to 50 per cent less and is the only method whereby continuous and reliable power may be obtained. Does away entirely with dangerous net work of overhead wires and poles and is not affected by snow or ice on rails. Cars absolutely cont oiled by operator without use of brakes. More than $100,000 has been spent in perfecting this system and the company is now preparing to build and equip a short line of road to demonstrate to the public the practical advantages derived from its use. To raise additional capital for this purpose a limited amount of stock is offered for sale to the public. Profits accruing to investors who take advantage of this opportunity will startle the financial and industrial world.

Write for complete information and reports of eminent engineers. This is an opportunity of a life time. Do not delay. Address

Leffler Electro-Magnetic Railway Company

Offices and Works:
153 South Jefferson Street, Chicago

Most Remarkable Train Ever Hauled

Twenty Compound Locomotives Pulled by One Engine

A train of locomotives, the only one on record in any country, was hauled all the way from Chicago to Philadelphia a short time ago. There were 20 of the locomotives in the train and one engine hauled them all. The train is of Vauclain compound engines, built years ago by the Baldwin works for the South Side elevated road in Chicago. The road afterwards changed its motive power from steam to electricity and all the engines were, thereby, put out of service. Locomotive No. 82 that hauled the train was among the earlier compounds built by the Baldwin works largely for experimental purposes. The trip from Chicago to Philadelphia was made without a mishap, and all along the route the unique sight attracted large crowds of sightseers.

Information comes from Egypt that the Sphinx is rapidly decaying because of the increased moisture of the atmosphere resulting from the more extended irrigation of the country.

In the newest improvement of Lord Kelvin's patent compass the illumination is effected from underneath, and either oil lamps or electric lights are used.

Train of Locomotives

MORE THAN 250 SATISFIED INVESTORS

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AUTOMOBILES HAUL CANNONS.

In Europe the motor wagons are being used for all sorts of purposes by various branches of the army. The illustration shows a motor wagon heavily loaded with ammunition, hauling two siege guns.

Motor Wagon Hauling Siege Guns

BRAKES TO AVERT COLLISION AT SEA.

Brakes are said to be the coming preventive means for averting collisions at sea. An important experiment with such brakes was tried on the St. Lawrence river near Montreal. The experiments are said to be such as to prove that by the use of a fin-brake a certain class of vessels can be brought to a sudden stop in a mere fraction of the time and space required to obtain the same effect by reversing the engines. A fin-brake is a pair of doors opening out from the side of the vessels to offer resistance to the water.

While the advantage of such a method has before been recognized by engineers, the idea has hitherto been considered impracticable by marine authorities. Conventional engineers declare that the force of the water would be such that when the fine were opened out at right angles to the ship they would be ripped.

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MAINE'S MAIDEN CRUISE A SERIES OF DISASTERS.

A series of disasters marked the maiden cruise of the battleship Maine just ended. There was trouble between the officers and crew before the vessel left Newport News. She encountered storms immediately after sailing, and then followed the gun mount accident and defective boilers, together with seven deaths, all in two months.

There is a scoop in the vessel's deck which is the result of structural weakness. It was caused by the practice firing of the Porto Rican coast, where the six-inch guns were tried. The recoil of the guns forced the decks out of shape.

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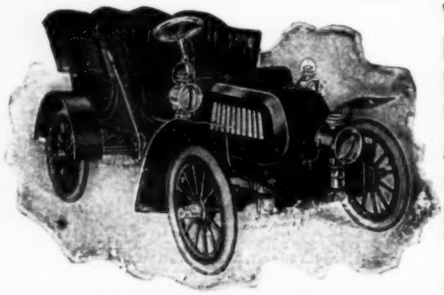

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TO ENCOURAGE HUNGARIAN SHIPBUILDING.

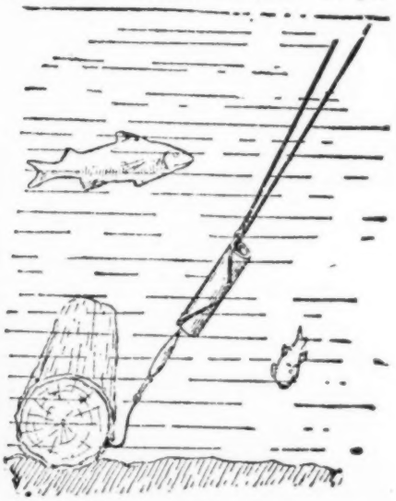
The Hungarian minister of trade has submitted to Parliament a proposal to encourage Hungarian shipbuilding by means of subsidy. The steamship companies, according to the project, will be allowed a certain grant per ton for every new vessel acquired during the next 15 years.

A new fishing boat of French make measures 90 feet in length, 28 feet in width, has a maximum draught of 14 feet and is driven by a 200-horse power gasoline motor.

The fifth annual convention of the National Metal Trades held in Buffalo recently, adopted resolutions favoring a national organization of the employers.

FISH HOOK RELEASING DEVICE.

A fish hook releasing device invented by a Michigan man, consists of a tubular section of lead with a cord attached to raise and lower it on the line. A piece of lead pipe would probably answer the same purpose. It is obvious that if the fisherman pulls the tube up and allows it to drop a number of times the hook will be driven out of the log or snag to which it has become attached. To permit this weight to be slipped over the line without liability of becoming detached as it falls, the slot through which the line is passed is in the form of a double spiral, making it easy to slip the tube on the line and drop it down until it strikes the hook.



SLIDING WEIGHT RELEASES HOOK.

KING EDWARD AS A FIRE CRANK.

Used to Aid the Firemen and Once at Least [illegible] Had a Narrow Escape

There are members of the London Fire Brigade who well remember King Edward VII in the role of an amateur fire fighter. As the young Prince of Wales, when not so much dignity was expected of him as at present, this particular diversion was very attractive to him. Neither he nor his friends, the Duke of Sutherland, Lord Arthur Sommerset and other young aristocrats of the 60's ever missed a London fire if they could help it.

The Fireman's Herald says: "On one occasion—it was a big fire at the King and Queen granaries—the then Prince of Wales greatly distinguished himself, working till the perspiration poured down his face, which was blackened with smoke, and narrowly escaped being crushed to death when the towering walls, forced out by the swollen grain, fell with a crash that might have been heard a mile away. Scarcely a soul recognized him, it is said, and the very men who were working by his side had no idea that the grimy, perspiring fireman was the heir to the throne of England.

Germany has 73 telegraphic cables, of which 48 connect the different component parts of the empire, 6 serve as means of communication between the colonies and 19 connect Germany with foreign countries.

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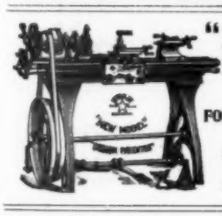

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THE BABY.

By George MacDonald.

Where did you come from, baby dear?
Out of the everywhere into the here.

Where did you get your eyes so blue?
Out of the sky as I came through.

What makes the light in them sparkle and spin?
Some of the starry spikes left in.

Where did you get that little tear?
I found it waiting when I got here.

What makes your forehead so smooth and high?
A soft hand stroked it as I went by.

What makes your cheek like a warm white rose?
Something better than any one knows.

Whence that three-cornered smile of bliss?
Three angels gave me at once a kiss.

Where did you get that pearly ear?
God spoke and it came out to hear.

Where did you get those arms and hands?
Love made itself into hooks and bands.

Feet, whence did you come, you darling things?
From the same box as the cherubs' wings.

How did they all just come to you?
God thought about me and so I grew.

But how did you come to us, you dear?
God thought of you, and so I am here.

WIRE DROPS IN MUD—FORMS GLASS.

Queer Phenomena Often Witnessed Near Snoqualmie Falls, Wash.

Mud turned into glass by electricity through the contact of a broken wire with the earth is a phenomenon frequently witnessed in the vicinity of Tacoma and Snoqualmie Falls, Wash., when the power transmission wires which carry the enormous water power of the falls drop to the ground. It is the result of the intense heat of the electric current on its way to the earth combined with the glass-making properties of the soil. There are so many of these remains of the electric glass made from mud out there that they have ceased to be a curiosity. Whenever the wire touches the mud the glass is formed instantly. The glass will never be mud again, for it is perfectly smooth and will wear everlastingly as any other glass of the same inferior quality. The accident when witnessed affords a fine exhibition of fireworks, but it is best for observers to be out of reach of the sparks, which are necessarily terrific in order to make such a remarkable and instantaneous transformation.

HOLLAND'S WINDMILLS REJUVENATED.

The windmills of Germany that have long served but little more important purpose than to look "picturesque," are to be put into actual use again. They are to be made to furinsh power for driving dynamos and to store up energy in storage batteries which it is believed will work great commercial economy. The four-armed "picturesque" mill, however, is to give way to the modern graceful and effective structure that is not yet considered artistic because it is yet useful.

Washington, D. C., has adopted a regulation forbidding spitting on the sidewalks.

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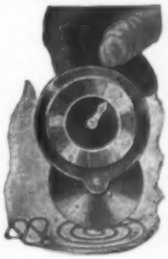

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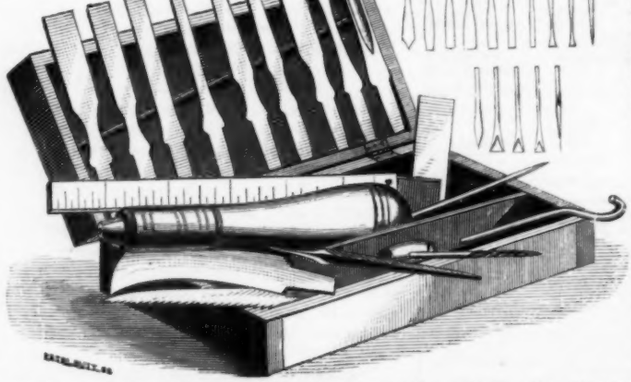

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